Claim 6 (Amended) The composite wrap material according to Claim 1,wherein the second layer is [a solid film material] selected from the group consisting of polyethylene, polypropylene and polyester.

Cancel claims 15, 16, 18, 19, 20 and 21.

RESPONSE

Applicant has amended claims 1 and 6 and canceled claims 15, 16, 18, 19, 20 and 21. The Examiner has rejected claims 1, 5-6, 8-12, 15-16 and 18-21 under 35 USC 112 as containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor at the time the application was filed, has possession of the claimed invention. The claims have been amended so that subject matter referred to by the examiner is no longer part of the claim language.

The Examiner has rejected claim 18 under 35 USC 102 as anticipated by Fuerholzer, 3,616,191. Applicant has canceled claim 18.

The Examiner has rejected claims 1,5,6,8,10,11,15,16 and 18 under 35 USC 102 as anticipated by DeFife, 6,150,035. The Examiner states that DeFife teaches a multilayer laminate comprising a substrate sheet of paper, a second coating of polyolefin film having its upper surface in contact with and bonded to the lower surface of the substrate sheet, and a polymer resin coating in contact with and bonded to the lower surface of the second coating of the polyolefin film. The polyolefin film may comprise for example, polyethylene or polypropylene. The polyolefin layers can be extrusion coated onto the paper substrate or alternatively the films can be coextruded onto the paper

substrate. The type of paper used for the substrate depends on the end use of the laminate and include for example paper, clay coated paper, glassine, polymer coated paper, paperboard and Kraft paper. Although paper of any weight can be employed as a substrate material, paper having weights in the range from about 20 to about 150 pounds per ream are useful, and papers having weights in the range of from about 30 to about 60 pounds per ream are preferred, wherein the term "ream" equals 3000 square feet. The polymer resin coating comprises thermoplastic polymers such as polyester and ethylene vinyl acetate. The polymer resin coating may further comprise fillers such as mica, silica, wollastonite, glass fibers, talc, graphite, boron fibers, sapphire fibers, steel fibers, or polymeric or polyester fibers. The examiner states that in terms of composite properties such as water vapor barrier properties, folding properties and strength, given that the composite taught by DeFife comprises the same materials as the instantly claimed invention, the invention taught by DeFife would inherently possess the same properties as instantly claimed.

Defife teaches a composite laminate suitable for preparing labels comprising; a substrate sheet of paper; a first coating of polyolefin film having a printable upper surface of the substrate sheet; a second coating of polyolefin film having its upper surface bonded to the lower surface of the substrate sheet; and a third coating comprising a pressure-sensitive adhesive on the lower surface of the second coating of polyolefin film. These composites may be used as labels, tapes, etc. In a second embodiment composite liner laminates comprise: a substrate sheet of paper; a first coating of polyolefin film having an upper surface and a lower surface wherein the lower surface is in contact with and bonded to the upper surface of the substrate sheet; a second coating of polyolefin film

having its upper surface in contact with and bonded to the lower surface of the substrate sheet; a resin coating in contact with and bonded to the lower surface of the second coating of polyolefin film said resin coating having a coefficient of friction which is greater than the coefficient of friction of the second coating of polyolefin film. (Abstract).

The composite laminate in one embodiment comprises: a substrate sheet of paper; a first coating of polyolefin film having a printable upper surface and a lower surface bonded to the upper surface of the substrate sheet; and a second coating of polyolefin having its upper surface bonded to the lower surface of the substrate sheet; and a third coating comprising a pressure-sensitive adhesive on the lower surface of the second coating of polyolefin film. The figures all show composite laminates having four or more layers. (Col. 2).

As stated in the Declaration of Thomas Bezigian, this product which has at least four layers and is used as a label does not produce a composite wrap material with the same properties as the claimed invention.

Mr. Bezigian is a person of at least ordinary skill in the art of ream wrap products, including barrier film processing, coextrusion technology, polymer processing, laminated films and papers, plastic film and sheet manufacturing. (Paragraphs 1-9 of Declaration). Mr. Bezigian has reviewed the application of the present invention and the DeFife patent. (Declaration Paragraph 10).

Sample 3 is a sample that is close to the product taught by Defife. Sample 3 is a poly/paper/poly sheet which would be layers 16,12,14 or 32,31,33. The final product would be similar to the stickers enclosed, where the sticker would be poly/paper/poly

(32,31,33) with adhesive (34) on the back so the sticker sticks to what you put on it. The sticker is on a liner (36) that has silicone (35) on it to keep the adhesive from sticking to it. (Declaration Paragraph 21).

It is the opinion of Mr. Bezigian that the composite of the present invention would have a higher burst strength than the products of DeFife. (Declaration Paragraph 16). It is the opinion of Mr. Bezigian that the products of DeFife would not provide the moisture vapor barrier properties of the composite of the present invention. (Declaration Paragraph 17).

The amended claims of the present invention require that the wrap material consist essentially of a first layer of paper having a basis weight of about 20-60 lbs/3,000 sq. ft., a second layer of a solid polymer film material and an adhesive layer between the first and second layers. DeFife teaches that it is essential to have at least four layer and the product could not be used as a material for wrapping reams of paper. As stated above, the figures and the specification of DeFife all teach that at least four layers are required. Therefore, the claims of the present invention are not anticipated nor obvious over DeFife.

The Examiner has rejected claims 1,5,6,8,10,11,12,15,16,19,20 and 21 under 35 USC 103 as being unpatentable over Fuerholzer in view of the admitted prior art. The Examiner states that Fuerholzer does not specifically teach that the basis weight of the paper substrate is about 20-60 lbs/3,000 sq. ft. or that one of the composite layers are metallized, however metallization is conventional in the art to provide improved barrier properties for a given packaging application. The Examiner states that it would have been obvious to utilize a conventional metallization process on the paper substrate or

polymer layer to provide the desired improved barrier properties and to utilize routine experimentation to determine the optimum basis weight of the paper substrate taught by Fuerholzer for a particular packaging application. Additionally the Examiner states that Fuerholzer does not teach the addition of pigments to one or more layers of the composite, but the use of pigments is conventional in the art to provide the desired color of the resulting product. Further, the Examiner states that it is conventional in the art to wrap reams of paper with polyethylene-coated paper packaging materials to provide a moisture barrier as evidenced by the admitted prior art. The Examiner states that it would have been obvious to utilize the polyethylene coated paper packaging material taught by Fuerholzer which provides improved adhesion between the polyethylene coating and the paper substrate as a ream wrap or other suitable packaging material.

The Examiner states that Fuerholzer teaches a method of obtaining improved adhesion of extruded olefin polymer coating materials to packaging material substrate, involving the use of a hydrolyzed copolymer of an olefin and ester of an unsaturated alcohol, e.g., an ethylene-vinyl acetate copolymer, as an adhesion improving primer or tie coat which permits extrusion of the coating material onto the primed surface at a lower temperature than ordinarily required, resulting in a better bond of coating material to substrate than ordinarily obtained at those lower temperature. The invention is applicable to extrusion coating of olefin polymers, and particularly by polyethylene or copolymers of ethylene with such ester monomers as vinyl acetate, methyl acrylate, etc. Any of the flexible wrapping materials commonly used in the packaging art are suitable substrates in the practice of the invention, including for example, Kraft paper, paperboard, glassine and regenerated cellulose.

In Fuerholzer, the primer application is added to the substrate, dried and then combined with polyolefin film against a chill roll. Fuerholzer describes the prior art as using conventional hot melt coating processes to coat packaging material substrates, e.g. paper, paper board, aluminum foil, cellophane, nylon and the like, with such olefin polymers as polyethylene, for the purpose of imparting heat seal properties, grease resistance properties and moisture barrier properties to the packaging materials. Col. 1 lines 11-16. In the case of polyethylene, films are sometimes difficult to secure to substrates even when using the high-temperature extrusion, especially when the extruded film thickness is about 2 mils or less. Col. 1 lines 57-60. According to the invention, before applying the hot coating material, the surface of the substrate is primed with a hydrolyzed copolymer of an olefin and an ester of vinyl alcohol. A hot melt of the coating material is applied over the primer, but the coating material need not be heated to such extreme temperatures as will cause oxidation of the material. Col. 2 lines 32-38. The hydrolyzed copolymer is applied in an amount sufficient to improve the adhesion of the coating material to the substrate. Col. 3 lines 4-6.

The process of Fuerholzer involves coating a packaging substrate with the hydrolyzed copolymer or interpolymer primer and thereafter applying, from a hot melt, an olefin polymer coating material at a temperature appreciably lower than the oxidation temperature of the olefin polymer in the coating material. Col. 3 lines 34-40. The substrate is first primed, e.g., by spraying, slushing, immersing, roller coating or otherwise applying a primer containing an interpolymer, and after the surface is primed, the coating material is applied. Preferably this is by extruding onto the primed surface of the substrate a polyethylene melt so as to form a film having a thickness of about 0.1 to

10 mls at a temperature significantly lower than the oxidation temperature of polyethylene. By the use of the aforedescribed primers, it was found possible to carry out an olefin polymer extrusion coating process at temperatures as low as the flowing point of the particular coating resin or polymer being used. Col. 4 lines 63-66.

In the process of Fuerholzer, the extruder is surmounted by a hopper containing the polyolefin resin to be extruded. In this process the extruder melts and continuously applies a controlled amount of polyolefin resin directly onto the primed web or substrate being coated. The substrate material is fed from a substrate roll to the primer application station where it receives a coating of primer. The prime-coated substrate is then passed through a drying zone to evaporate volatile solvents and thence over a combining roll where a curtain of extruded polyolefinic resin falls directly onto the primed substrate. The polyolefin coats out on the substrate as the coating material and substrate pass through the nip formed by the combining roll and a chill roll whereby a polyolefin-coated substrate is formed.

Mr Bezigian has reviewed the Fuerholzer patent. (Declaration Paragraph 10). Fuerholzer teaches applying a primer to the paper, drying and then adding a liquid hot polymer. (Declaration Paragraph 11). In the opinion of Mr. Bezigian, it would not be obvious to a person of ordinary skill in the art to replace a ream-wrap paper having a coating with a ream-wrap paper having a solid film adhered thereto. It is known among those skilled in the art that coatings applied with a Meyer rod or equivalents do not exhibit the same strength as solid films. For example, solid films have biaxial strength properties so that the strength exhibited in the machine direction is different than that

exhibited in the cross-machine direction. Conversely, coatings are isotropic so that their strength properties are independent of direction. (Declaration Paragraph 12).

An example of one film used by the applicant, AET FILMS, AQS Transparent OPP Film that is coextruded, biaxially oriented polypropylene film. The film has a greater tensile strength in the cross-machine direction than in the machine direction. Conversely, paper has a greater tensile strength in the machine direction than the cross-machine direction. By laminating these two materials together, the tensile strength in each direction is enhanced. This positively affects the burst strength of the material. (Declaration Paragraph 13).

Burst strength is determined by standardized tests such as that defined by the American Society for Testing and Materials test, ASTM D 774, entitled "Test Method for Bursting Strength of Paper". This test can be used to determine the burst strength of polymer materials such as polyethylene terephthalate film and sheeting (ASTM D5047-95). (Declaration paragraph 15).

A person of ordinary skill in the art of packaging would know that a high burst strength means that by testing an appropriate sample of available ream wrap products having the same basis weight according to a standardized test such as ASTM D 774, the wrap made in accordance with the claimed invention would yield a high burst strength. The composite of the present invention would have a higher burst strength than the products made by Fuerholzer. (Declaration paragraph 16).

The water vapor transfer rate (WVTR) as determined by a standardized test method such as TAPPI T464 om-90 for a product made in accordance with the claimed invention is less than 0.5 g/100 in2/24 hr at 100 degrees Fahrenheit, 90% relative

humidity. Fuerholzer would not provide the moisture vapor barrier properties of the composite of the present invention. (Declaration Paragraph 17).

Sample 2 is an example of the Fuerholzer patent. This is a polyolefin coating on a paper with a primer in between. Sample 2 is a sheet of paper with a poly coating applied at high temperature (approximately 600 F) as a liquid and then cooled to solidify on the paper. A coating to promote adhesion of the poly to the paper is applied to the paper before the poly is applied. The poly becomes an integral part of the paper that is observable on the glossy side, but the coating to promote adhesion is not observable as it is buried between the poly and the paper. (Declaration Paragraph 20).

The amended claims require that the second layer be a solid polymer film material, wherein the polymer film is solid during lamination to the paper. Fuerholzer teaches the polymer film material being applied as a liquid. As stated by Mr. Bezigian this causes the two end products to be substantially different.

The Examiner has rejected claims 1,5,6,8-12,15-16,18-21 under 35 USC 103 as unpatentable over Weisman, 4,196,247 in view of the admitted prior art. The Examiner states that Weisman teaches packaging materials comprising flexible packaging material substrate, such as a paper substrate or a metal foil; a normally tacky heat sealable wax composition comprising wax, isobutylene, and petrolatum, coated on a surface of the substrate; and a non-blocking solidified hot melt coating applied over the heat sealable wax composition wherein the non-blocking coating comprises a solidified mixture of petroleum wax and a polymer resin selected from the group consisting of low and medium density polyethylene and ethylene vinyl acetate.

The Examiner further states that Weisman teaches that while a gravure cylinder is preferably utilized for applying the hot melt to the adhesive coating at a controlled thickness, spraying or other application methods may be utilized. Though Weisman does not specifically teach extruding the hot melt coating, extrusion coating of a hot melt polymer onto a substrate is a well known and conventional coating method that would have been obvious. The Examiner states that Weisman does not specifically teach that the basis weight of the paper substrate is about 20-60 lbs/3,000 sq. ft. or that one of the composite layers is metallized, however metallization in a packaging composite material is conventional in the art to provide improved barrier properties for a given packaging application. It would have been obvious to utilize a conventional metallization process on the paper substrate or polymer layer to provide the desired improved barrier properties for a particular packaging application and further to utilize routine experimentation to determine the optimum basis weight of the paper substrate taught by Weisman for a particular packaging application given that basis weight is a known result effected variable. Additionally, though Weisman does not teach the addition of pigments to one or more layers of the composite, the use of pigments is conventional in the art to provide the desired color of the resulting product, and would not have been obvious. Further, given that it is conventional in the art to wrap reams of paper with wax-coated or polyethylene –coated paper packaging materials to provide a moisture barrier as evidenced by the admitted prior art; it would have been obvious to utilize the wax coated paper packaging material taught by Weisman as a ream wrap or other suitable packaging material.

Weisman teaches a flexible heat sealable packaging material including a flexible web of substrate material, a normally tacky heat sealable wax composition on the surface of the substrate, and a non-blocking coating applied as a hot melt over the heat sealable layer which has good release properties with respect to itself and to the non-coated side of the substrate. The non-blocking coating melts at heat sealing temperatures to allow the underlying heat sealable material to pass therethrough and complete the seal.

The invention includes a substrate of flexible packaging material, a normally tacky heat sealable wax composition coated on a surface of the substrate, and a non-blocking solidified hot melt coating applied over the heat sealable wax composition to a selected thickness which allows the heat sealable layer to penetrate the over coating and provide a firm seal upon heat sealing. Col. 1 line 64- col. 2 line 5.

The non-blocking coating can be applied over the heat sealable material on many different substrates including paper, metal foil, or cellophane, etc. The adhesive material is a normally tacky wax composition which is typically coated at a thickness of 20 to 40 pounds per ream on one surface of the substrate. Col. 2 lines 33-41.

Mr. Bezigian has reviewed the Weisman reference. (Declaration Paragraph 10). Weisman teaches applying a liquid polymer to the adhesive. Weisman teaches adding a liquid adhesive and then a hot liquid polymer so that the polymer is so hot that it melts through the adhesive to create a bond. (Declaration Paragraph 11).

In the opinion of Mr. Bezigian, it would not be obvious to a person of ordinary skill in the art to replace a ream-wrap paper having a coating with a ream-wrap paper having a solid film adhered thereto. It is known among those skilled in the art that coatings applied with a Meyer rod or equivalents do not exhibit the same strength as solid

films. For example, solid films have biaxial strength properties so that the strength exhibited in the machine direction is different than that exhibited in the cross-machine direction. Conversely, coatings are isotropic so that their strength properties are independent of direction. (Declaration Paragraph 12).

An example of one film used by the applicant, AET FILMS, AQS Transparent OPP Film that is coextruded, biaxially oriented polypropylene film. The film has a greater tensile strength in the cross-machine direction than in the machine direction. Conversely, paper has a greater tensile strength in the machine direction than the cross-machine direction. By laminating these two materials together, the tensile strength in each direction is enhanced. This positively affects the burst strength of the material. (Declaration Paragraph 13).

Burst strength is determined by standardized tests such as that defined by the American Society for Testing and Materials test, ASTM D 774, entitled "Test Method for Bursting Strength of Paper". This test can be used to determine the burst strength of polymer materials such as polyethylene terephthalate film and sheeting (ASTM D5047-95). (Declaration paragraph 15).

A person of ordinary skill in the art of packaging would know that a high burst strength means that by testing an appropriate sample of available ream wrap products having the same basis weight according to a standardized test such as ASTM D 774, the wrap made in accordance with the claimed invention would yield a high burst strength. The composite of the present invention would have a higher burst strength than the products made by Weisman. (Declaration paragraph 16).

The water vapor transfer rate (WVTR) as determined by a standardized test method such as TAPPI T464 om-90 for a product made in accordance with the claimed invention is less than 0.5 g/100 in2/24 hr at 100 degrees Fahrenheit, 90% relative humidity. Weisman would not provide the moisture vapor barrier properties of the composite of the present invention. (Declaration Paragraph 17).

Sample 1 is a Paper/Wax sample as described by Weisman. This is a sample of a paper that has a wax coating applied in heated liquid form and then cooled to solidify on the paper. The wax becomes an integral part of the paper which can be seen on the glossy side. (Declaration Paragraph 19).

The amended claims require that the second layer be a solid polymer film material, wherein the polymer film is solid during lamination to the paper. Weisman teaches the polymer film material be applied as a liquid. As stated by Mr. Bezigian this causes the two end products to be substantially different.

Sample 4 is the product of the claimed invention. This is paper/poly/film with the poly being applied as a liquid (600 F) but it is used to glue the paper and the solid film together when it is solidified. Sample 4 shows the film separated from the paper (which has the poly stuck to the paper in the areas where the film is picked up) artificially to demonstrate the product. In normal production and use the film/poly/paper become one sheet or product and cannot come apart. The product of the present invention uses a solid film sheet in the production and not liquefied layers of poly. (Declaration Paragraph 22).

Neither DeFife, Fuerholzer, Weisman, the admitted prior art alone or in combination anticipate nor make obvious the amended claims of the invention.

Applicant believes the application is in condition for allowance.

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